

Application No. 10/710,260  
Technology Center 2884  
Amendment dated September 22, 2006  
Reply to Office Action dated May 22, 2006

**RECEIVED  
CENTRAL FAX CENTER**

**SEP 22 2006**

**REMARKS**

In the Office Action, the Examiner reviewed claims 1-20 of the above-identified US Patent Application, with the result that all of the claims were under either 35 USC §102 as anticipated by U.S. Patent No. 5,689,087 to Jack or 35 USC §103 as being obvious over Jack in view of one or more of three additional references. In the present response, Applicant has amended the specification and claims as set forth above. More particularly:

The specification has been amended to update the status of U.S. patent applications cited in the specification and issued or published since the filing of the present application.

The specification has also been amended to correct typographical errors relating the Greek letter  $\mu$ .

Independent claims 1 and 14 have been amended to more particularly recite that the "window [24 is] located at the second surface so that infrared radiation passes through the wall [24] of the substrate [12], through the cavity [14], and then to the [optical/thermopile] sensing element [18]." Support for these amendments can be found in Applicant's Figures 1 through 4.<sup>2</sup>

---

<sup>2</sup> According to MPEP §2163 II.A.3(a), "drawings alone may provide a 'written description' of an invention as required by [35 USC §112, first paragraph]," and "[i]n those instances where a visual representation can flesh out words, drawings may be used in the same manner and with the same limitations as the specification." (Citations omitted).

Application No. 10/710,260  
Technology Center 2884  
Amendment dated September 22, 2006  
Reply to Office Action dated May 22, 2006

Independent claim 1 has been further amended to cancel the requirement that the wall (24) only passes radiation of wavelengths longer than 1.1 micrometers. This limitation has been added to claim 5, which depends from claim 1, consistent with Applicant's teachings regarding silicon (which includes monocrystallographic silicon) at paragraph [0002].

Applicant believes that the above amendments do not present new matter. Favorable reconsideration and allowance of claims 1-20 are respectfully requested in view of the above amendments and the following remarks.

As noted above, claims 1-20 were rejected under 35 USC §102 or 103 in view of Jack as the sole or primary reference. In making the rejections, the Examiner explained that "Jack discloses an optical sensor package comprising: a substrate (12) in which a cavity (26) is defined, . . . ." While this characterization of Jack is accurate relative to the process disclosed by Jack, it is not accurate relative to the optical sensor package disclosed by Jack. Specifically, the cavity 26 identified by the Examiner is only present during the processing of Jack's package, and in the final package (Figure 1d) is completely filled with a radiation-absorbing region 28 formed of, for example, "a multilayered Ti/Zn/Se structure" (column 4, lines 51-60). Therefore, Jack does

Application No. 10/710,260  
Technology Center 2884  
Amendment dated September 22, 2006  
Reply to Office Action dated May 22, 2006

not disclose or suggest an optical sensor package in which a cavity exists (according to the ordinary meaning of the word "cavity," e.g., "a hole; a hollow place" according to Webster's New Twentieth Century Dictionary Unabridged, Second Edition (1977)). Consequently, Jack also does not disclose or suggest an optical sensor in which "radiation passes through the wall of the substrate, through the cavity, and then to the [optical/thermopile] sensing element," as required by amended independent claims 1 and 14.

Applicant notes that Figure 6e of Jack shows a void 87 between a sapphire substrate 82 and a bridge 84a containing a thermopile sensor 84. However, Jack discloses at column 8, lines 28-31, that this void 87 is also filled in with an "absorbing layer" in accordance with Figure 1d if the package is to be "backside illuminated."

Finally, Applicant notes that the remaining applied references (U.S. Patent No. 5,369,280 to Liddiard, U.S. Patent No. 6,222,111 to Kern, and U.S. Patent No. 6,603,183 to Hoffman) do not disclose "backside illuminated" sensors in which radiation passes through a substrate, through a cavity formed in the substrate, and then to a sensor formed on a membrane bonded to the substrate and spanning the cavity.


In view of the above, Applicant respectfully requests withdrawal of the rejections to the claims under 35 USC §102 and 103.

Application No. 10/710,260  
Technology Center 2884  
Amendment dated September 22, 2006  
Reply to Office Action dated May 22, 2006

In view of the above, Applicant believes that the claims define patentable novelty over all the references, alone or in combination, of record. It is therefore respectfully requested that this patent application be given favorable reconsideration.

Should the Examiner have any questions with respect to any matter now of record, Applicant's representative may be reached at (219) 462-4999.

Respectfully submitted,

By   
Domenica N.S. Hartman  
Reg. No. 32,701

September 22, 2006  
Hartman & Hartman, P.C.  
Valparaiso, Indiana 46383  
TEL.: (219) 462-4999  
FAX: (219) 464-1166

Attachment: Petition for Extension of Time